WATER QUALITY APPENDIX

Water Quality Limited Streams Database

ODEQ tracks water quality using the Water Quality Limited Streams Database. This database can be viewed on the internet at: http://waterquality.deq.state.or.us/wq/303dlist/303dpage.htm[1](ODEQ 1998b).
The criteria for classifying a reach water quality limited and data requirements can also be viewed on the internet at: http://waterquality.deq.state.or.us/WQLData/ListingCriteria.htm (ODEQ 1998a).
The following tables present water quality data by parameter, from ODEQ's database, for the North Fork Coquille Watershed.

Table WQ-1: Temperature
Water quality limited criteria for listing: Rearing - Summer season 7-day moving average of the daily maximum exceeds 64°F.

ID and Water body	Boundaries	Change from 1996	1998 Listing Status	Supporting Data
4991 Alder Ck.	Mouth to headwaters	Addition	303(d) List	1996 data shows exceedence of temperature criteria, 7 day ave. max. 65.7°F, 1997 data do not show an exceedence of 7 day ave. max. was 63.9°F.
5001 Cherry Ck.	Little Cherry Ck. to Headwaters	Removed - Met Standards	Meets Standards	DEQ Data (1 Site): 7 day average of daily maximum of 68.0°F with 57 days exceeding standard (64°F) in 1994. Site on BLM land did not exceed the temperature criteria. 7 day ave. max. for 1997 was 58.0°F. The 1994 data was not used because it was a drought year and a second year's data was available, which was below the temperature criteria.
4628 Cherry Ck.	Mouth to Little Cherry Ck.	Segment Modification	303(d) List	DEQ Data (1 Site): 7 day ave. of daily max. of 68.0°F with 57 days exceeding standard (64°F) in 1994. BLM site in 1996 7 day ave. max. water temperature 67.7°F.
5012 No. Fk. Cherry Ck.	Mouth to Little Cherry	Addition	Meets Standards	No temperature exceedences at BLM site, 7 day ave. max. for 1997 was 62.5°F.
4635 Little No. Fk. Coquille	Mouth to Headwaters	Removed - Met Standards	Potential Concern	DEQ Data (Site near mouth): 7 day ave. of daily max. of 65.8°F with 13 days exceeding temperature standard (64°F) in 1994. BLM site in 1997 did not exceed temperature criteria, 7 day ave. max. for 1997 was 59.8°F. 1994 was a drought year.
5007 No. Fk. Coquille	Little No. Fk. to headwaters	Removed - Met Standards	Meets Standards	Three BLM sites in the upper basin above Little North Fork in 1996 61.0/61.8/61.5°F and one site in 1997 61.5°F had no temperature exceedences for the 7 day ave. max. water temperature.
4633 No. Fk. Coquille	Mouth to Middle Ck.	No Change	303(d) List	DEQ Data (3 Sites: Hwy 42 near mouth, Bennett Park, and Near Hervey Bridge; RM 0.1, 10.2, and 18): 7 day ave. of daily max. of 71.2/75.8°F, nd/71.0°F and nd/70.4°F with 79/96, nd/56, and nd/62 days respectively exceeding temperature standard in 1994.
4634 No. Fk. Coquille	Middle Ck. to Little No. Fk.	Segment Modification	303(d) List	DEQ Data (4 Sites: RM 29.0,32.8,33.9, 47): 7 day ave. of daily maximums of 68.7/71.5/67.4/65.8°F with 57/77/31/7 days exceeding standard (64°F) in 1994; ODFW (2 Sites; RM 39.25, 40.3): 7 day ave of daily max of 66.7/64.4°F with 17/7 days exceeding std. in 93.
4641 Evans Ck.	Mouth to Headwaters	No Change	Meets Standards	DEQ Data (Site at Fairview Elementary School): 7 day ave. of daily max. of 63.9°F with 14 days exceeding temperature standard (64°F) in 1994.
4643 Giles Ck.	Mouth to Headwaters	No Change	Meets Standards	DEQ Data (Site near mouth): 7 day ave. of daily maximum of 57.8°F with 0 days exceeding temperature standard (64°F) in 1994.
4646 Johns Ck.	Mouth to Headwaters	No Change	Meets Standards	BLM Data (2 Sites: Lower and Upper site): 7 day ave. of daily max. of 60.3°F and 61.6°F with 0 days exceeding temperature standard (64°F) respectively in 1994. Four BLM sites in 1996, 7 day ave. max. water temperatures 61.8/63.3/62.4/63.8°F.

[1] At the Water Quality Limited Streams page, click on "Review the final 1998 303(d) database" then click on "Search 303d database from map of Oregon", click on "Coquille."

ID and Water body	Boundaries	Change from 1996	1998 Listing Status	Supporting Data
4996 Middle Ck.	Mouth to headwaters	Addition	303(d) List	Two BLM sites in 1996, both sites exceeded temperature criteria, 7 day ave. max. was 68.3/69.9°F
4997 Park Ck.	Mouth to Headwaters	Addition	Meets Standards	In 1996, No temperature exceedences, 7 day ave. max. was 57.1°F
5000 Woodward Ck.	Mouth to headwaters	Addition	303(d) List	Two BLM sites in 1996, data shows exceedence of temperature criteria, 7 day ave. max. at one site 70.0°F and does not show an exceedence at the other was 62.5°F, stream too short to segment.

Table WQ-2: Sediment
Water quality limited criteria of listing: Documented that sedimentation is a significant limitation to fish or other aquatic life

ID and Water body	Boundaries	Change from 1996	1998 Listing Status	Supporting Data
4855 No. Fk. Coquille	Mouth to Middle Ck.	No Change	Need Data	NPS Assessment - segment 164: moderate, observation (DEQ, 1988). Supporting Data: None. Rationale for not listing: No supporting data or information.
4856 No. Fk. Coquille	Middle Ck. to Headwaters	No Change	Need Data	NPS Assessment - segments 165 & 166: moderate, observation (DEQ, 1988). Supporting Data: None. Rationale for not listing: No supporting data or information

Table WQ-3: Dissolved Oxygen
Water quality limited criteria for listing :
May1 - Sept. 1: Water quality limited criteria for listing: Cold-water aquatic life: Dissolved oxygen < 8 mg/l or 90% sat.
Oct. 1 - Apr. 1: Water quality limited criteria for listing: Salmonid spawning: Dissolved oxygen < 11mg/l

ID and Water body	Boundaries	Change from 1996	1998 Listing Status	Supporting Data
4973 No. Fk. Coquille	Mouth to Middle Ck.	No Change	For Season May 1 - Sept. 30: TMDL Approved	Basis for Consideration for listing: DEQ Data; d1 in 305(b) Report (DEQ, 1994); NPS Assessment - segment 164: severe, observation (DEQ, 1988). Supporting Data: DEQ Data (2 Sites: 402063, 404252; RM 0.2, 4.1): 36% (3 of 14), 0% (0 of 6) May through September values exceeded standard (8 mg/l or 90% saturation) with a minimum of 5.1, 8.8 respectively from WY 1986 - 1995 (Cold water rearing, approx. May - Sept.) Rationale for not listing: TMDL Report (March 1994) submitted to EPA for approval.
4734 No. Fk. Coquille	Mouth to Middle Ck.	No Change	For Season Oct. 1 - Apr. 30: Meets Standards	Basis for Consideration for listing: DEQ Data; d1 in 305(b) Report (DEQ, 1994); NPS Assessment - segment 164: severe, observation (DEQ, 1988). Supporting Data: DEQ Data (2 Sites: 402063, 404252; RM 0.2, 4.1): 0% (0 of 6) and 20% (1 of 5) October through April values exceeded standard (11 mg/l or 95% saturation) with a minimum of 9.9 between WY 1986 - 1995 (Cold water spawning, approx. Oct. - Apr.)

Table WQ-4: Bacteria
Water quality limited criteria for listing: A 30-day log mean of 126 E coli organisms per 100 ml based on a minimum of 5 samples. No single sample shall exceed 406 E coli organisms per 100 ml.

ID and Water body	Boundaries	Change from 1996	1998 Listing Status	Supporting Data
4715 No. Fk. Coquille	Mouth to Middle Ck.	No Change	Season: Fall-Winter-Spring 303(d) List	DEQ Data (2 Sites: 402063, 404252; RM 0.2, 4.1): 43% (3 of 7), 0% (0 of 9) FWS values exceeded fecal coliform standard (400) with a maximum value of 1600 between WY 1986 - 1995.
4716 No. Fk. Coquille	Mouth to Middle Ck.	No Change	Season: Summer Meets Standards	DEQ Data (Site 402063, 404252; RM 0.2, 4.1): 0% (0 of 9 and 0 of 9 respectively) Summer values exceeded fecal coliform standard (400) between 1991 - 1995.

Table WQ-5: pH
Water quality limited criteria of listing: Greater than 10% of the samples exceed standard of 6.5 to 8.5 for the South Coast and a minimum of at least two exceedences of the standard for a season of interest.

ID and Water body	Boundaries	Change from 1996	1998 Listing Status	Supporting Data
4911 No. Fk. Coquille	Mouth to Middle Ck.	No Change	Summer Season: Meets Standards	DEQ Data (Site 402063, 404252; RM 0.2, 4.1): 0% (0 of 10 and 0 of 9 respectively) Summer values exceeded pH standard (6.5 - 8.5) between WY 1986 - 1995.
4817 No. Fk. Coquille	Mouth to Middle Ck.	No Change	Fall-Winter-Spring Seasons: Meets Standards	DEQ Data (Site 402063, 404252; RM 0.2, 4.1): 0% (0 of 6 and 0 of 7 respectively) FWS values exceeded pH standard (6.5 - 8.5) between WY 1986 - 1995.

Table WQ-6: Habitat Modification
Water quality limited criteria for listing: Documentation that habitat conditions are a significant limitation to fish or other aquatic life

ID and Water body	Boundaries	Change from 1996	1998 Listing Status	Supporting Data
4771 No. Fk. Coquille	Mouth to Middle Ck.	No Change	Need Data	Basis for consideration for listing: NPS Assessment - segment 164: moderate, observation (DEQ, 1988). Supporting data: None. Rationale for not listing: No supporting data or information.
4772 No. Fk. Coquille	Middle Ck. to Headwaters	No Change	Need Data	Basis for consideration for listing: NPS Assessment - segment 166 moderate, data (DEQ, 1988). Supporting data: None. Rationale for not listing: No supporting data or information.
4780 Moon Ck.	Mouth to Headwaters	No Change	Need Data	Basis for consideration for listing: NPS Assessment - segment 206: moderate, observation (DEQ, 1988). Supporting data: None. Rationale for not listing: No supporting data or information

Table WQ-7: Nutrients
Water quality limited criteria for listing: Greater than 10% of the samples exceed standard and a minimum of at least two exceedences of the standard or criteria used in draft TMDLs for a season of interest.

ID and Water body	Boundaries	Change from 1996	1998 Listing Status	Supporting Data
4912 No. Fk. Coquille	Mouth to Middle Ck.	No Change	Need Data	Basis for consideration for listing: NPS Assessment - segment 164: moderate, observation (DEQ, 1988). Supporting Data: None. Rationale for not listing: No supporting data or information.
4810 No. Fk. Coquille	Middle Ck. to Headwaters	No Change	Need Data	Basis for consideration for listing NPS Assessment - segment 165: moderate, observation (DEQ, 1988). Supporting data: None Rationale for not listing: No supporting data or information

Table WQ-8: Chlorophyll a
Water quality limited criteria for listing: 3-month average Chlorophyll a value exceeds 0.015 mg/l indicating phytoplankton may impair the recognized beneficial uses

ID and Water body	Boundaries	Change from 1996	1998 Listing Status	Supporting Data
4809 No. Fk. Coquille	Mouth to Middle Ck.	No Change	Meets Standards	DEQ Data (Site 402063; RM 0.2): 0% (0 of 8) Summer values exceeded chlorophyll a standard (15 mg/l) between WY 1986 - 1995.

Table WQ-9: Flow Modification
Water quality limited criteria of listing: Documented flow conditions that are a significant limitation to fish or other aquatic life.

ID and Water body	Boundaries	Change from 1996	1998 Listing Status	Supporting Data
4896 No. Fk. Coquille	Mouth to Middle Ck.	No Change	Need Data	Basis for consideration for listing: NPS Assessment - segment 164: moderate, observation (DEQ, 1988). Supporting data: None

Temperature Data

Table WQ-10: Seasonal Maximum and Minimum Temperature Data

Site Name & Location	Seasonal Maximum	Date	Seasonal Minimum	Date	Seasonal Delta T	Date
North Fk. at Fairview Bridge	67.1	08/03/93	52.2	08/26/93	7.2	07/31/93
North Fk. Near Hervey Bridge	71.4	08/03/94	59.2	07/06/94	7.6	07/06/94
North Fk. Below Hudson Creek	69.8	08/03/94	47.5	10/13/94	8.1	07/07/94
North Fk. at Rick Deadmans	72.7	07/19/94	47.3	10/11/94	11.5	07/19/94
North Fk. at River Mile 33.9 (Below Moon Ck)	69.0	08/03/94	46.6	10/24/94	8.6	08/06/94
Evans Ck. at Fairview School	65.7	08/03/94	45.9	10/11/94	9.0	07/06/94

Table WQ-11: 7-Day Maximum and Minimum Temperature Data

Site Name & Location	7 Day Max.	7 Day Min.	7 Day Delta T	Date	# Days >59	Seasonal Max - 59	# Days > 64	Seasonal Max - 64
North Fk. at Fairview Bridge	64.4	59.1	5.3	08/06/93	41	8.1	7	3.1
North Fk. Near Hervey Bridge	70.4	64.4	5.9	07/21/94	65	12.4	63	7.4
North Fk. Below Hudson Ck.	68.7	61.9	6.7	07/21/94	80	10.8	57	5.8
North Fk. at Rick Deadmans	71.5	61.2	10.3	07/21/94	101	13.7	79	8.6
North Fk. at River Mile 33.9 (Below Moon Ck.)	67.4	60.9	6.5	08/07/94	62	10.0	31	5.0
Evans Ck. at Fairview School	63.9	58.3	5.7	08/05/94	89	6.7	14	1.6

Delta T = Highest value of daily max - daily min for the season
7 day max = Average of the daily maximums for the highest 7 consecutive days
7 day min = Average of the daily minimums for the same 7 days
7 day Delta T = Average of the daily max - daily min for the same 7 days
Seasonal max - 59 = Number of degrees seasonal max is above 59
Seasonal max - 64 = Number of degrees seasonal max is above 64

Shading of major streams in 1950

Aerial photos taken before logging began in earnest in the more remote parts of the Watershed show the canopy closure above streams, and by that indicate the amount of stream shading. Aerial photos are normally taken around the middle of the day in the summer months because that is when the sun is high in the sky. This provides the best illumination and the shortest shadows for aerial photography purposes, and incidently also documents the amount of sunlight that reaches the stream during the hottest part of the day during the summer. The flood plain areas next to the 8th, 7th, 6th and lower 5th order reaches were converted to agriculture in the late 19th century. Consequently, while the 1950 aerial photos may be useful for detecting trends, they do not show the presettlement conditions in the parts of the watershed converted to agriculture. The Blue Ridge area and the 5th order reach of Hudson Creek logged before 1950.

Vegetation provided shade on main stem of the North Fork Coquille:
The 8th order stream reach: The 1950 aerial photos show the streamside trees and shrubs confined to a narrow strip between the river and agricultural fields along the 8th order reach of the North Fork Coquille. The river surface is clearly visible along this reach. The aerial photos show more stream side trees in 1950 than in 1997. However, the trees visible in the 1950 photos that survived to 1997 benefitted from 47 years of growth resulting in larger individual tree crowns. Even if the stream side vegetation were fully intact, the width of the river would likely limit overhead shading.

The 7th order stream reach: The surface of the North Fork Coquille 7th order reach is visible in the 1950 aerial photos where the river is bordered by flood plain on both sides. Along those stretches where the river flows along the edge of the flood plain, and by that confined by the upland on the other side, the channel becomes narrow and partly hidden by the more intact areas of stream side stands. Although the river surface is difficult to see, the channel location is clearly defined by the canopy gap above the channel.

The 6th and lower 5th order stream reaches: The 1950 aerial photographs generally show a very narrow riparian strip between the North Fork Coquille and farmland with short reaches of exposed stream bank. Over all, the stream side trees are small and the river is visible in the canopy gap above the river. The land next to the North Fork Coquille from around the junction with Little Fork North Creek to the west boundary of section 7, T.26S.,R.10W. was logged shortly before the 1950 aerial photos were taken. Stream side vegetation in this reach was remnant bigleaf maples, young red alder and brush.

The upper 5th order stream reach: The North Fork Coquille flows through late-successional forest from the north boundary of the south half section 8, T.26S.,R.10W., to the headwaters. The stream side forest consists of irregular edged bands of bigleaf maples and myrtles with scattered conifer. The upslope areas are conifer dominated. The river surface is visible through canopy gaps. On short stretches, where conifer dominated stands grow close to the river, the location of the channel is indicated by a narrow linear gap in the canopy. Tributary 3rd and 4th order streams have similar stream side stands and those channels are also visible in places through canopy gaps. The stream channel and flood plain are highly visible where the North Fork Coquille flows through sections 16 and 21 in T.26S.,R10W. suggesting fluvial disturbances limited overhead shading.

Vegetation provided shade on Middle Creek:
The 6th order stream reach: The 1950 aerial photos show unlogged stream side forest along about 2,000 feet of the 6th reach of Middle Creek where it flows through section 5, T.28S.,R.11W. The rest of land along this reach had been logged or converted agriculture by 1950. The flood plain area east of the stream supported myrtle, bigleaf maple with scattered conifer. Many of those conifers were grand firs. The aerial photo shows a road on the flood plain that has since been abandoned and now grown over. The west bank is against upland that supported an open conifer overstory with a well stocked hardwood understory. The surface of Middle Creek is clearly visible on the aerial photos for most of the 2,000 foot reach.

The 5th order stream reach: In 1950, the lowest segment of the 5th order reach of Middle Creek with an intact late-successional forest on both sides of the channel flows through the W½ section 14, T.27S.,R.11W. This segment is a little over 1,000 feet long. The stream side forest consist of patchy to scattered conifer with a hardwood understory. The creek surface, in this reach, is not visible on the aerial photos. Upstream, past the logging in section 15, Middle Creek is again flowing through late-successional forest. However, the channel is confined by the Middle Creek Road on the north side of the channel. Most of the overhead shade provided by the trees on the north side of Middle Creek was lost when the Middle Creek Road was built. Middle Creek does loop to the south away from the road in section 12. Here Middle Creek is visible from above and is bordered for part of way by a small hardwood covered flood plain. Elsewhere along the loop, the stream side forest consists of scattered to clumpy conifer with a hardwood understory. Middle Creek also loops to the south away from the road in sections 4 and 5. Here the channel is topographically confined and the streamside area is dominated by myrtles and bigleaf maples. Gravel bars in the channel are visible in the 1950 aerial photos. The prominence of gravel bars, is attributed to naturally occurring landslides originated in the Park Creek headwaters and down hill logging next to Middle Creek upstream from the Middle Creek-Park Creek junction.

Vegetation provided shade on Cherry Creek:
The 5th order stream reach: In 1950, the lowest segment of the 5th order reach of Cherry Creek with an intact late-

successional forest on both sides of the channel flows through the NE ¼, section 23, T.27S.,R.11W. The stream side area is dominated by myrtle and bigleaf maple with scattered conifer. Gaps in the hardwood canopy show the forest floor in several locations along the draw, however, Cherry Creek was not readily visible in the 1950 aerial photos.

The 4th order stream reaches: The 4th order stream reaches, North Fork Cherry and South Fork Cherry Creeks, were similar to the 5th order reach in being hardwood dominated with scattered conifers, and gaps showing the forest floor.

The lowest 4th order reach of Little Cherry with an intact late-successional forest on both sides of the channel flows through section 25, T.27S.,R.11W. The streamside stands are mixed conifer and hardwood. Myrtle is more common that bigleaf maple. Openings vary from discontinuous gaps to extended linear gaps above the channel. The stream surface was not visible on the aerial photos but the forest floor was visible through the gaps.

Vegetation provided shade on Johns Creek: In 1950, the lowest segment of intact late-successional forest on the main stem of Johns Creek was on the western side of section 7, T.29S.,R.11W. The 4th order reach of Johns Creek and the 3rd order tributaries flowed through mixed stands of conifer and hardwoods. The forest floor is visible though the sparse above one south flowing tributary. Otherwise, the canopy varies from closed to displaying short linear gaps above the channel. The surface of Johns Creek is not visible through the gaps in the canopy.

Vegetation provided shade on Wimer Creek: In 1950, the lowest segment of intact late-successional forest on Wimer Creek was on the west boundary of section 19, T.28S.,R.11W. The stream side areas, next to the 4th order main stem and 3rd order tributaries, were occupied by a mix of conifers, myrtles and bigleaf maples. The canopy was closed above most of Wimer Creek, however, the forest floor was visible in gaps along short reaches. However, Wimer was not directly visible in the gaps suggesting the shrub layer may be shading the channel.

Vegetation provided shade on Alder Creek: In 1950, the lowest segment of intact late-successional forest on Alder Creek was on the south boundary of section 31, T.26S.,R.10W. Alder Creek is visible in the small flood plain reach north of the south boundary of section 31. Along the 5th order reach, the streamside stands are dominated by myrtles and maples. Some stretches have scattered conifers in the streamside stands. Other stretches have hardwoods only extending 100 feet either side of the creek. The northwest flowing 3rd order tributary, in section 29, T.26S.,R.10W., has a more or less continuous narrow linear canopy gap above it. That linear gap extends on up a 2nd order and a 1st order draw to a headwall north of the Coos Mountain Lookout. The narrow relatively straight appearance suggests a past debris torrent may be responsible for the canopy gap.

Vegetation provided shade on Honcho Creek: In 1950, the lowest segment of intact late-successional forest on Honcho Creek was on the south boundary of section 33, T.26S.,R.10W. The lowest 800 feet of the 5th order reach flows through a narrow hardwood dominated flood plain. Upstream, the streamside stands had moderately stocked overstories of conifers with hardwoods dominated the understory stands. Openings vary from discontinuous gaps to extended linear gaps above the channel.

Vegetation provided shade on Park Creek: In 1950 the flood plain near the mouth of Park Creek was dominated by myrtles. Upstream, large debris torrents removed all stream side vegetation and exposed the stream channel before the 1950 aerial photos were taken.

References

ODEQ. 1998a. Listing Criteria for Oregon's 1998 303(d) List of Water Quality Limited Water Bodies October 1998. http://waterquality.deq.state.or.us/WQLData/ListingCriteria.htm

ODEQ. 1998b. Water Quality Limited Streams 303(d) List. http://waterquality.deq.state.or.us/wq/303dlist/303dpage.htm